

CLAIMS

1.- (currently amended) Operating method for a convertible aircraft (1), equipped with a fuselage (2), standard fixed wings (3) with ailerons, a tail unit (4) with rudders (20),
5 propulsion engines (5), a rotor (6) with blades (7, 8) located ~~on the fuselage~~ at approximately the center of the fuselage in between the wings, a transmission between the engines and the rotor equipped with a brake and a clutch, and a landing gear (9), the method comprises direct and reverse transitions from a helicopter mode to an autogyro mode and from an autogyro-helicopter mode to an aeroplane mode, the direct transition from the helicopter
10 mode to the autogyro mode comprising the following step:

 declutching the rotor from the propulsion engines;
the direct transition from the autogyro-helicopter mode to the aeroplane mode comprising the following steps:

 adjusting the collective and cyclic pitches of the blades (7, 8) of the rotor (6) to
15 essentially zero degrees, in such a way that they cease to lift and control the aircraft (1) and the latter is lifted by the standard fixed wings and controlled by the ailerons and the rudders (20);

 quickly reducing the rotational velocity of the rotor (6) using a brake (24) thereof;
characterized in that the method also comprises

20 stopping the rotor in a transverse position of at least two of its blades (7, 8) in a position essentially transverse to the direction of flight;

 retracting the rotor blades towards a stern of the aircraft, until their longitudinal axis are parallel to the fuselage (2) of the aircraft;

 rotating the blade which had a reverse air flow when the blades were stopped
25 transversely to the direction of the flight to approximately 180° on its pitch axis;

 deploying the rotating blades, independently from one another, to an azimuthal position determined by a pre-determined range of angles;

 adjusting the angle of attack of the deployed blades until the blades are deployed in a position parallel to the fixed wings; and

30 the reverse of each of these transitions accomplished by executing each of the above steps in reverse sequence.

2 - 5 (cancelled)

35 6 – (currently amended) Method, according to claim 1, characterised in that said step of adjusting the angle of attack of the deployed rotating blades (7, 8) such that each blade is parallel to one of the fixed wings and traverse to a forward direction of the aircraft thus

transitioning into a biplane wherein the rotor blades now form upper wings and the fixed wings form the lower wings.

7.- (currently amended) Convertible aircraft (1), of the type that comprises a fuselage (2),
5 fixed wings (3) with ailerons, a tail unit (4) with rudders (20), propulsion engines (5), a rotor
(6) with blades (7, 8) located on the fuselage at approximately the center of the fuselage in
between the wings. landing gear comprising:

a means to transition from helicopter mode to autogyro mode;

a means for the direct transition from autogyro-helicopter mode to aeroplane mode;

10 a second servo-engine (18) for the regulation of the collective and cyclic pitches of
the blades (7, 8) of the rotor (6) to essentially zero degrees, in such a way that they cease to
lift and control the aircraft (1) and the latter is lifted and controlled by the ailerons and the
rudders (20);

a means to stop the rotors (24);

15 a first servo-engine (17) to retract and deploy the rotor blades both towards and away
from the stern of the aircraft, to position the blades essentially perpendicular to the fixed
wings and when needed is parallel to the fixed wings, and to deploy the blades to an
azimuthal position determined by a pre-determined range of angles; and to rotate at least
one of the rotor blades to approximately 180° on its pitch axis ; when needed to rotate the
20 blades such that each blade now form upper wings and the fixed wings form the lower
wings.

8 - 14 (cancelled)

25 15.- (Previously presented) Convertible aircraft (1), according to claim 7, characterised in
that the blades (7, 8) of the rotor (6) are designed in such a way that the chord at the root is
greater than the chord at the tips.

16 - (Previously presented) Convertible aircraft (1), according to claim 7, characterised in
30 that said propulsion engines (5) are engines with propellers (11).

17.- (Previously presented) Convertible aircraft (1), according to claim 7, characterised in
that the propellers (11) are placed astern of the fixed wings (3).

35 18.- (Previously presented) Convertible aircraft (1), according to claim 7, characterised in
that said propellers (11) have a variable pitch.

19.- (Previously presented) Convertible aircraft (1), according to claim 7, characterised in that said propulsion engines (5) are piston, gas turbine or jet engines.

20.- (Previously presented) Convertible aircraft according to Claim 7 further comprising:

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a means to transition from autogyro mode to helicopter mode; and

a means to transition from aeroplane mode to autogyro-helicopter mode.